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(54) **METHOD AND APPARATUS FOR RESTRICTING USAGE AREA OF MOBILE TERMINAL, AND MOBILE TERMINAL**

VERFAHREN UND VORRICHTUNG ZUR EINSCHRÄNKUNG DES NUTZUNGSBEREICHES EINES MOBILEN ENDGERÄTS SOWIE MOBILES ENDGERÄT

PROCÉDÉ ET APPAREIL PERMETTANT DE RESTREINDRE LA ZONE D'UTILISATION D'UN TERMINAL MOBILE, AINSI QUE TERMINAL MOBILE

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Description**TECHNICAL FIELD**

[0001] The present invention relates to the field of mobile communications, and in particular, to a method and an apparatus for restricting a usage region of a mobile terminal, and a computer-readable storage medium comprising a computer program for carrying out the method.

BACKGROUND

[0002] For a particular purpose, usage ranges of some mobile terminals (for example, mobile phones, POS machines, and a portable wireless broadband apparatus Mi-Fi) often need to be restricted. Within only a specified usage range, these mobile terminals can normally use a wireless communication service such as a voice communication service, a short message service, or a data communication service provided by a communications operator. For example, MiFi can be used only in a specified region. When MiFi is in the specified region, MiFi can work normally to provide a wireless network for another device. When MiFi is outside the specified region, MiFi cannot work normally and cannot provide a wireless network for another device.

[0003] In the prior art, a usage range of a mobile terminal is restricted by locking a location area code (LAC, Location Area Code). When a mobile terminal is in a region identified by a locked location area code, the mobile terminal can normally use a wireless communication service. Otherwise, the mobile terminal cannot normally use a wireless communication service.

[0004] However, a region identified by a location area code is excessively large, and even a district or a county is in a region identified by a location area code. Therefore, in the prior art, a usage range of a mobile terminal cannot be restricted precisely.

[0005] US 5 966 668 describes techniques for enhancing radio communication systems, e.g., radio local loop systems. Radio local loop systems replace a portion of the wired connections between a local exchange and, e.g., a telephone set, with a wireless connection. Like conventional wired systems, remote unit mobility is limited, and therefore the techniques support system reconfigurations, such as cell splitting, in a manner which obviates the necessity of reprogramming each remote unit in a radio local loop system.

[0006] In US 2007/0275717 A1 techniques for performing network selection using information stored at a terminal are described. The terminal may store coverage and availability information for previously detected wireless networks, cell information for previously detected cells, usage information for previously accessed wireless networks, and/or other information. The terminal may select a wireless network to attempt acquisition based on the stored coverage information and its current location, the stored cell information and information for the current

location (e.g., an identity of a cell detected at the current location), and/or other stored information.

SUMMARY

[0007] The invention is defined by the subject-matter of the independent claims. Preferred embodiments are defined in the dependent claims.

BRIEF DESCRIPTION OF DRAWINGS

[0008] To describe the technical solutions in the embodiments of the present invention or in the prior art more clearly, the following briefly describes the accompanying drawings required in the embodiments or the prior art. Apparently, the accompanying drawings in the following description show merely some embodiments of the present invention, and a person of ordinary skill in the art may still derive other drawings from these accompanying drawings without creative efforts.

FIG. 1 is a flowchart of a method for restricting a usage region of a mobile terminal according to an embodiment of the present invention;

FIG. 2 is a schematic diagram of coverage of a wireless communications network according to an embodiment of the present invention;

FIG. 3 is a flowchart of another method for restricting a usage region of a mobile terminal according to an embodiment of the present invention;

FIG. 4 is a schematic diagram of communication between a control device and a mobile terminal according to an embodiment of the present invention;

FIG. 5 is a schematic structural diagram of an apparatus for restricting a usage region of a mobile terminal according to an embodiment of the present invention;

FIG. 6 is a schematic structural diagram of another apparatus for restricting a usage region of a mobile terminal according to an embodiment of the present invention; and

FIG. 7 is a schematic structural diagram of a mobile terminal according to an embodiment of the present invention.

DESCRIPTION OF EMBODIMENTS

[0009] To make the objectives, technical solutions, and advantages of the present invention clearer and more comprehensible, the following further describes the present invention in detail with reference to the accompanying drawings and embodiments. Apparently, the described embodiments are merely some but not all of the embodiments of the present invention. All other embodiments obtained by a person of ordinary skill in the art based on the embodiments of the present invention without creative efforts shall fall within the protection scope of the present invention.

[0010] As shown in FIG. 1, an embodiment of the present invention provides a method for restricting a usage region of a mobile terminal. The method is applied to a mobile terminal, and the method may include the following steps.

[0011] S100: Obtain cell identification information of at least one cell network that covers a current location of the mobile terminal, where the cell network corresponds to a wireless communications network corresponding to a network standard supported by the mobile terminal, and the cell identification information is frequency channel number information, or the cell identification information includes frequency channel number information and auxiliary cell identification information.

[0012] The mobile terminal may be a mobile phone, a POS machine, a portable wireless broadband apparatus, or the like.

[0013] A cell (also referred to as a cellular cell) is a minimum unit on a wireless communications network, and multiple cells may form a region corresponding to a location area code. A cell is smaller than a region corresponding to a location area code.

[0014] The frequency channel number information is a number of a fixed frequency. To avoid interference caused by same frequency channel number information, frequency channel number information of cells in a region is different from each other. Frequency channel number information of cells is different from each other in a wide area of a communications apparatus that uses a standard of Global System for Mobile Communications (GSM, Global System for Mobile Communication). Therefore, frequency channel number information, obtained by the mobile terminal, of cells of the wireless communications network that covers the current location is different from each other.

[0015] A frequency multiplexing technology is used in a network standard such as Wideband Code Division Multiple Access (WCDMA, Wideband Code Division Multiple Access), Time Division Synchronous Code Division Multiple Access (TD-SCDMA, Time Division Synchronous Code Division Multiple Access), or Long Term Evolution (LTE, Long Term Evolution). Therefore, frequency channel number information, obtained by the mobile terminal, of the cell network that covers the current location may be the same. Therefore, to reduce misoperations, auxiliary cell identification information of a cell may also be obtained to identify the cell. In WCDMA, auxiliary cell identification information is a primary scrambling code. In TD-SCDMA, auxiliary cell identification information is a scrambling code. In LTE, auxiliary cell identification information is a physical layer cell number. Cells can be more precisely distinguished by using frequency channel number information of the cells and auxiliary cell identification information of the cells, to reduce misoperations. The cell identification information may consist of the frequency channel number information and the auxiliary cell identification information.

[0016] It may be understood that, different frequency

bands are used in different network standards. For example, frequency channel numbers of a frequency band 900 MHz and a frequency band 1800 MHz are used in the GSM standard. When the mobile terminal supports only the GSM standard, frequency channel number information of the frequency band 900 MHz and the frequency band 1800 MHz may be obtained.

[0017] Further, alternatively, only cell identification information of at least one cell network of a first communications operator that covers the current location of the mobile terminal may be obtained. The first communications operator is a communications operator that provides a subscriber identity module card/universal subscriber identity module card of the mobile terminal.

[0018] For example, for the frequency band 900MHz in the GSM standard, a downlink frequency band of China Mobile is 935-954 MHz, and a downlink frequency band of China Unicom is 954-960 MHz. When the subscriber identity module card/universal subscriber identity module card of the mobile terminal is provided by China Mobile, only frequency channel number information of 935-954 MHz may be obtained.

[0019] A wireless communication signal of a cell network is provided by a base station, and one base station may provide a wireless communication signal for one or more cell networks. When multiple cell networks cover the current location of the mobile terminal, the mobile terminal may obtain wireless communication signals of the multiple cell networks provided by a base station. As shown in FIG. 2, it is assumed that a base station 201 provides a wireless communication signal for a cell network A, a base station 202 provides a wireless communication signal for a cell network B, and a base station 203 provides a wireless communication signal for a cell network C, and the wireless communication signals of the three cell networks A, B, and C cover a current location of the mobile terminal 200. In this case, the mobile terminal 200 may obtain cell identification information of the three cell networks A, B, and C at the current location.

[0020] The mobile terminal may obtain the cell identification information by performing frequency scanning or receiving a cell broadcast message. Specifically, S100 may include:

performing, by the mobile terminal, frequency scanning, and obtaining the cell identification information of the at least one cell network that covers the current location of the mobile terminal from a frequency scanning result; or

receiving, by the mobile terminal, a cell broadcast message, and obtaining, from the broadcast message, the cell identification information of the at least one cell network that covers the current location of the mobile terminal.

[0021] S200: Determine whether the cell identification information includes cell identification information matching locked identification information, where a parameter

of the locked identification information is in a one-to-one correspondence with a parameter of the cell identification information.

[0022] When the network standard supported by the mobile terminal is GSM, the cell identification information is frequency channel number information and the locked identification information includes a locked frequency channel number, and when the network standard supported by the mobile terminal is not GSM, the cell identification information includes frequency channel number information and auxiliary cell identification information, and the locked identification information includes a locked frequency channel number and locked auxiliary identification information.

[0023] S300: The mobile terminal accesses a cell network corresponding to the locked identification information, when the obtained cell identification information includes the cell identification information matching the locked identification information.

[0024] S400: The mobile terminal skips accessing a wireless communication network when the obtained cell identification information does not include the cell identification information matching the locked identification information.

[0025] Specifically, a network access function of the mobile terminal may be locked in a particular period to not access a wireless communications network, so as to discard the network. For example, cell handover and cell reselection functions of the mobile terminal are locked. After a period during which the network access function of the mobile terminal is locked is beyond the particular period, go back to S100.

[0026] The locked identification information may be cell identification information of a cell covered in a restricted region. The restricted region is a usage region, such as a factory, to which the mobile terminal needs to be restricted. There may be one or at least two pieces of locked identification information.

[0027] Optionally, when the obtained cell identification information includes only the cell identification information matching the locked identification information, the cell network corresponding to the locked identification information may be accessed. When the obtained cell identification information includes at least two pieces of cell identification information matching the locked identification information, a cell network corresponding to one piece of the locked identification information may be accessed. Preferably, a cell network that corresponds to the locked identification information and has maximum signal strength may be accessed.

[0028] Optionally, S300 may include: when the obtained cell identification information includes the cell identification information matching the locked identification information, and signal strength of the cell identification information matching the locked identification information is not less than a preset strength threshold, accessing, by the mobile terminal, the cell network corresponding to the locked identification information.

[0029] In some cases, although the mobile terminal can access the cell network corresponding to the locked identification information, the cell network has relatively poor signal strength and cannot provide a desirable communication service for a user. Therefore, to ensure that a desirable communication service is provided for a user, the cell network corresponding to the locked identification information may be accessed when signal strength is relatively high.

[0030] According to the method for restricting a usage region of a mobile terminal provided in this embodiment of the present invention, cell identification information of a cell network that covers a current location of a mobile terminal may be obtained. When the obtained cell identification information includes cell identification information matching locked identification information, the mobile terminal accesses a cell network corresponding to the locked identification information; otherwise, the mobile terminal skips accessing a wireless communications network. In the present invention, the cell identification information of the cell network at the current location is compared with the locked identification information, to control cell network access of the mobile terminal. In the present invention, because a region corresponding to a cell is smaller than that corresponding to a location area code, a usage range of the mobile terminal can be more precisely restricted.

[0031] Based on the embodiment shown in FIG. 1, as shown in FIG. 3, an embodiment of the present invention provides another method for restricting a usage region of a mobile terminal. Before S200, the method may further include:

S101: Determine a cell network having maximum signal strength in the at least one cell network that covers the current location of the mobile terminal, and send cell identification information corresponding to the cell network having maximum signal strength to a control device connected to the mobile device.

[0032] In another embodiment of the present invention, alternatively, cell identification information corresponding to another cell network that covers the current location of the mobile terminal may also be sent to a control device. When multiple pieces of cell identification information are sent to the control device, signal strength information may be simultaneously sent to the control device.

[0033] S102: Determine, according to a region lock instruction delivered by the control device, the cell identification information corresponding to the cell network having maximum signal strength, where the region lock instruction includes the cell identification information corresponding to the cell network having maximum signal strength.

[0034] The region lock instruction may be delivered by the control device after a user performs a region locking operation on the control device, or may be automatically delivered by the control device.

[0035] S103: Determine the cell identification information corresponding to the cell network having maximum

signal strength as the locked identification information.

[0036] It may be understood that, when the mobile terminal is located in the restricted region, S101 to S103 may be performed. The cell network having maximum signal strength is one of cell networks that provide wireless communication services for the mobile terminal at the current location of the restricted region. The cell network has maximum signal strength and therefore provides highest wireless communication service quality. When the cell identification information corresponding to the cell network having maximum signal strength is set as the locked identification information, the mobile terminal can access the cell network having better service quality.

[0037] S101 to S103 are a process of setting the locked identification information. It may be understood that, the setting process does not need to be performed each time before S200 is performed. Alternatively, S101 to S103 may be performed before S100, and a sequence of performing S101 to S103 and S100 is not limited in the present invention.

[0038] The control device may be a server, a personal computer, a mobile device, or the like that is in communication connection with the mobile terminal. In the present invention, the mobile terminal may be in communication connection with the control device by using WiFi, a USB path, or the like. After step S103 is performed, step S200 shown in FIG. 1 may start to be performed. After performing step S300 or S400, the mobile terminal may further return a cell network access result, for example, whether a cell network is accessed, or information about an accessed cell network, to the control device.

[0039] When the control device is in communication connection with the mobile terminal by using a USB path, referring to FIG. 4, a process in which a mobile terminal 502 communicates with a control device 501 to set locked identification information and attempt to access a cell may include:

step 1: delivering, by the control device 501 by using a USB path, a first control instruction for obtaining cell identification information to the mobile terminal 502;

step 2: after the mobile terminal 502 receives the first control instruction by using a USB port, forwarding, by the USB port, the first control instruction to a non-access stratum;

step 3: parsing, by the non-access stratum, the first control instruction, and sending a message obtained after parsing to an access stratum;

step 4: performing, by the access stratum, frequency scanning, or receiving a broadcast message, obtaining cell identification information of at least one cell network that covers a current location of the mobile terminal 502, determining a cell network having maximum signal strength in the at least one cell network that covers the current location of the mobile terminal 502, and sending cell identification information cor-

responding to the cell network having maximum signal strength to the non-access stratum;

step 5: sending, by the non-access stratum to the control device 501 by using the USB path, the cell identification information sent by the access stratum;

step 6: sending, by the control device 501, a region lock instruction to the mobile terminal 502 by using the USB path, where the region lock instruction includes the cell identification information corresponding to the cell network having maximum signal strength;

step 7: forwarding, by the USB port of the mobile terminal 502, the region lock instruction to the non-access stratum;

step 8: parsing, by the non-access stratum, the region lock instruction, and sending a message obtained after parsing to the access stratum, where the message obtained after parsing includes the cell identification information corresponding to the cell network having maximum signal strength;

step 9: setting, by the access stratum, the cell identification information corresponding to the cell network having maximum signal strength as locked identification information, searching the cell identification information obtained in step 4 for cell identification information matching the locked identification information, and if the cell identification information matching the locked identification information is found, accessing a cell network corresponding to the locked identification information; otherwise, skipping accessing a wireless communications network and performing network discarding processing; and

step 10: returning, by the mobile terminal 502, a processing result of step 9 to the control device 501 by using the USB path.

[0040] The access stratum and the non-access stratum are the prior art of mobile terminal communications technologies, and a person skilled in the art can understand the foregoing working process of the access stratum and the non-access stratum.

[0041] The present invention further provides an apparatus for restricting a usage region of a mobile terminal in correspondence with the foregoing method embodiment.

[0042] As shown in FIG. 5, an embodiment of the present invention provides an apparatus for restricting a usage region of a mobile terminal. The apparatus is applied to a mobile terminal, and the apparatus may include: a cell identification information obtaining unit 100, a match determining unit 200, a network access unit 300, and a network discarding unit 400.

[0043] The cell identification information obtaining unit 100 is configured to obtain cell identification information of at least one cell network that covers a current location of the mobile terminal, where the cell network corresponds to a wireless communications network corresponding to a network standard supported by the mobile

terminal, and the cell identification information is frequency channel number information, or the cell identification information includes frequency channel number information and auxiliary cell identification information.

[0044] The mobile terminal may be a mobile phone, a POS machine, a portable wireless broadband apparatus, or the like.

[0045] The cell identification information obtaining unit 100 may include: a frequency scanning subunit and/or a broadcast receiving subunit.

[0046] The frequency scanning subunit is configured to perform frequency scanning, and obtain the cell identification information of the at least one cell network that covers the current location of the mobile terminal from a frequency scanning result.

[0047] The broadcast receiving subunit is configured to: receive a cell broadcast message, and obtain, from the broadcast message, the cell identification information of the at least one cell network that covers the current location of the mobile terminal.

[0048] The match determining unit 200 is configured to determine whether the cell identification information includes cell identification information matching locked identification information, where a parameter of the locked identification information is in a one-to-one correspondence with a parameter of the cell identification information.

[0049] When the network standard supported by the mobile terminal is GSM, the cell identification information is frequency channel number information and the locked identification information includes a locked frequency channel number, and when the network standard supported by the mobile terminal is not GSM, the cell identification information includes frequency channel number information and auxiliary cell identification information, and the locked identification information includes a locked frequency channel number and locked auxiliary identification information.

[0050] The network access unit 300 is configured to access a cell network corresponding to the locked identification information, when the cell identification information obtained by the cell identification information obtaining unit 100 includes the cell identification information matching the locked identification information.

[0051] The network discarding unit 400 is configured to skip accessing a wireless communication network when the cell identification information obtained by the cell identification information obtaining unit 100 does not include the cell identification information matching the locked identification information.

[0052] Specifically, a network access function of the mobile terminal may be locked in a particular period to not access a wireless communications network, so as to discard the network. For example, cell handover and cell reselection functions of the mobile terminal are locked. After a period during which the network access function of the mobile terminal is locked is beyond the particular period, the cell identification information obtaining unit

100 may be triggered again.

[0053] The network access unit 300 may specifically be configured to:

when the obtained cell identification information includes the cell identification information matching the locked identification information, and signal strength of the cell identification information matching the locked identification information is not less than a preset strength threshold, access, by the mobile terminal, the cell network corresponding to the locked identification information.

[0054] In some cases, although the mobile terminal can access the cell network corresponding to the locked identification information, the cell network has relatively poor signal strength and cannot provide a desirable communication service for a user. Therefore, to ensure that a desirable communication service is provided for a user, the cell network corresponding to the locked identification information may be accessed when signal strength is relatively high.

[0055] According to the apparatus for restricting a usage region of a mobile terminal provided in this embodiment of the present invention, cell identification information of a cell network that covers a current location of a mobile terminal may be obtained. When the obtained cell identification information includes cell identification information matching locked identification information, the mobile terminal accesses a cell network corresponding to the locked identification information; otherwise, the mobile terminal skips accessing a wireless communications network. In the present invention, the cell identification information of the cell network at the current location is compared with the locked identification information, to control cell network access of the mobile terminal. In the present invention, because a region corresponding to a cell is smaller than that corresponding to a location area code, a usage range of the mobile terminal can be more precisely restricted.

[0056] Based on the embodiment shown in FIG. 5, as shown in FIG. 6, an embodiment of the present invention provides another apparatus for restricting a usage region of a mobile terminal. The apparatus may further include: a strongest network determining unit 101, an identification information determining unit 102, and an identification information locking unit 103.

[0057] The strongest network determining unit 101 is configured to: before the step of determining, by the match determining unit 200, whether the cell identification information includes the cell identification information matching the locked identification information, determine a cell network having maximum signal strength in the at least one cell network that covers the current location of the mobile terminal, and send cell identification information corresponding to the cell network having maximum signal strength to a control device connected to the mobile device.

[0058] The identification information determining unit 102 is configured to determine, according to a region lock instruction delivered by the control device, the cell iden-

tification information corresponding to the cell network having maximum signal strength, where the region lock instruction includes the cell identification information corresponding to the cell network having maximum signal strength.

[0059] The region lock instruction may be delivered by the control device after a user performs a region locking operation on the control device, or may be automatically delivered by the control device.

[0060] The identification information locking unit 103 is configured to determine the cell identification information corresponding to the cell network having maximum signal strength as the locked identification information.

[0061] The cell network having maximum signal strength is one of cell networks that provide wireless communication services for the mobile terminal at the current location of the restricted region. The cell network has maximum signal strength and therefore provides highest wireless communication service quality. When the cell identification information corresponding to the cell network having maximum signal strength is set as the locked identification information, the mobile terminal can access the cell network having better service quality.

[0062] The control device may be a server, a personal computer, a mobile device, or the like that is in communication connection with the mobile terminal. In the present invention, the mobile terminal may be in communication connection with the control device by using WiFi, a USB path, or the like.

[0063] Correspondingly, an embodiment of the present invention further provides a storage medium. The storage medium is configured to store an application program. When the application program runs, the method for restricting a usage region of a mobile terminal in the embodiments of the present invention is executed. The method for restricting a usage region of a mobile terminal in the embodiments of the present invention is applied to a mobile terminal, and the method may include:

obtaining cell identification information of at least one cell network that covers a current location of the mobile terminal, where the cell network corresponds to a wireless communications network corresponding to a network standard supported by the mobile terminal, and the cell identification information is frequency channel number information, or the cell identification information includes frequency channel number information and auxiliary cell identification information;

determining whether the cell identification information includes cell identification information matching locked identification information, where a parameter of the locked identification information is in a one-to-one correspondence with a parameter of the cell identification information; and

accessing, by the mobile terminal, a cell network corresponding to the locked identification information, when the obtained cell identification information in-

cludes the cell identification information matching the locked identification information; or skipping accessing, by the mobile terminal, a wireless communication network when the obtained cell identification information does not include the cell identification information matching the locked identification information.

[0064] An embodiment of the present invention further provides an application program. When the application program runs, the method for restricting a usage region of a mobile terminal in the embodiments of the present invention is executed. The method for restricting a usage region of a mobile terminal in the embodiments of the present invention is applied to a mobile terminal, and the method may include:

obtaining cell identification information of at least one cell network that covers a current location of the mobile terminal, where the cell network corresponds to a wireless communications network corresponding to a network standard supported by the mobile terminal, and the cell identification information is frequency channel number information, or the cell identification information includes frequency channel number information and auxiliary cell identification information;

determining whether the cell identification information includes cell identification information matching locked identification information, where a parameter of the locked identification information is in a one-to-one correspondence with a parameter of the cell identification information; and

accessing, by the mobile terminal, a cell network corresponding to the locked identification information, when the obtained cell identification information includes the cell identification information matching the locked identification information; or skipping accessing, by the mobile terminal, a wireless communication network when the obtained cell identification information does not include the cell identification information matching the locked identification information.

[0065] The present invention further provides a mobile terminal corresponding to the foregoing method embodiment.

[0066] The mobile terminal provided in this embodiment of the present invention may include: a processor, a memory, a communications interface, and a bus.

[0067] The processor, the memory, and the communications interface are connected and communicate with each other by using the bus.

[0068] The memory stores executable program code.

[0069] The processor reads the executable program code stored in the memory, to run a program corresponding to the executable program code to perform the following steps:

obtaining cell identification information of at least one cell network that covers a current location of the mobile terminal, where the cell network corresponds to a wireless communications network corresponding to a network standard supported by the mobile terminal, and the cell identification information is frequency channel number information, or the cell identification information includes frequency channel number information and auxiliary cell identification information;
determining whether the cell identification information includes cell identification information matching locked identification information, where a parameter of the locked identification information is in a one-to-one correspondence with a parameter of the cell identification information; and
accessing a cell network corresponding to the locked identification information, when the obtained cell identification information includes the cell identification information matching the locked identification information; or skipping accessing a wireless communication network when the obtained cell identification information does not include the cell identification information matching the locked identification information.

[0070] The processor in the mobile terminal provided in this embodiment of the present invention may be a baseband chip. The memory may be a multi-chip package. The communications interface may include: a USB port, a radio frequency component, and a WiFi chip. In addition, the mobile terminal provided in this embodiment of the present invention may further include a subscriber identity module card.

[0071] Specifically, as shown in FIG. 7, the mobile terminal provided in this embodiment of the present invention may include: a baseband chip 701, a radio frequency component 702, a multi-chip package 703, a subscriber identity module card (SIM card) 704, a WiFi chip 705, and a USB port 706. The radio frequency component 702, the multi-chip package 703, the subscriber identity module card 704, the WiFi chip 705, and the USB port 706 are all electrically connected to the baseband chip 701.

[0072] The baseband chip 701 is configured to perform operations such as performing data processing, completing signaling interaction with a network side, processing a control command and a data request of a control device, performing authentication by using the subscriber identity module card 704, and reading/writing the multi-chip package 703.

[0073] The radio frequency component 702 is configured to provide a 3G uplink path of mobile WiFi.

[0074] The multi-chip package 703 is integrated with a flash memory and a double data rate synchronous dynamic random access memory DDR. The flash memory is configured to store an image and data of the processor. The DDR is configured to store a program that runs.

[0075] The WiFi chip 705 is configured to carry a wireless local area network connection of the mobile terminal.

[0076] The USB port 706 is used as a physical connection path for the mobile terminal and the control device, and carries data interaction between the control device and the mobile terminal.

[0077] An embodiment of the present invention provides another mobile terminal. The mobile terminal may further include: a power supply management unit. The power supply management unit supplies power to the baseband chip 701, the radio frequency component 702, the multi-chip package 703, the subscriber identity module card 704, the WiFi chip 705, and the USB port 706.

[0078] The foregoing descriptions are merely examples of the embodiments of the present invention, but are not intended to limit the present invention.

Claims

1. A method for restricting a usage region of a mobile terminal, wherein the method is performed by the mobile terminal, and the method comprises:

obtaining (S100) cell identification information of at least one cell network that covers a current location of the mobile terminal, wherein the cell network corresponds to a wireless communications network corresponding to a network standard supported by the mobile terminal, and the cell identification information is frequency channel number information, or the cell identification information comprises frequency channel number information and auxiliary cell identification information;
determining (S200) whether the cell identification information comprises cell identification information matching locked identification information, wherein a parameter of the locked identification information is in a one-to-one correspondence with a parameter of the cell identification information; and
accessing (S300), by the mobile terminal, a cell network corresponding to the locked identification information, when the obtained cell identification information comprises the cell identification information matching the locked identification information; or skipping (S400) accessing, by the mobile terminal, a wireless communication network when the obtained cell identification information does not comprise the cell identification information matching the locked identification information,

characterized in that

before the step of determining whether the cell identification information comprises cell identification information matching locked identification information, the method further comprises:

- determining (S101) a cell network having maximum signal strength in the at least one cell network that covers the current location of the mobile terminal, and sending cell identification information corresponding to the cell network having maximum signal strength to a control device connected to the mobile terminal;
- determining (S102), according to a region lock instruction delivered by the control device, the cell identification information corresponding to the cell network having maximum signal strength, wherein the region lock instruction comprises the cell identification information corresponding to the cell network having maximum signal strength; and
- determining (S103) the cell identification information corresponding to the cell network having maximum signal strength as the locked identification information.
2. The method according to claim 1, wherein when the network standard supported by the mobile terminal is GSM, the cell identification information is frequency channel number information and the locked identification information comprises a locked frequency channel number, and when the network standard supported by the mobile terminal is not GSM, the cell identification information comprises frequency channel number information and auxiliary cell identification information, and the locked identification information comprises a locked frequency channel number and locked auxiliary identification information.
 3. The method according to claim 1 or 2, wherein the accessing (300), by the mobile terminal, a cell network corresponding to the locked identification information, when the obtained cell identification information comprises the cell identification information matching the locked identification information comprises:

when the obtained cell identification information comprises the cell identification information matching the locked identification information, and signal strength of the cell identification information matching the locked identification information is not less than a preset strength threshold, accessing, by the mobile terminal, the cell network corresponding to the locked identification information.
 4. The method according to any one of claims 1 to 3, wherein the obtaining (S100) cell identification information of at least one cell network that covers a current location of the mobile terminal comprises:

performing, by the mobile terminal, frequency

scanning, and obtaining the cell identification information of the at least one cell network that covers the current location of the mobile terminal from a frequency scanning result; or

receiving, by the mobile terminal, a cell broadcast message, and obtaining, from the broadcast message, the cell identification information of the at least one cell network that covers the current location of the mobile terminal.

5. An apparatus for restricting a usage region of a mobile terminal, wherein the apparatus is applied to the mobile terminal, and the apparatus comprises: a cell identification information obtaining unit (100), a match determining unit (200), a network access unit (300), and a network discarding unit (400), wherein the cell identification information obtaining unit (100) is configured to obtain cell identification information of at least one cell network that covers a current location of the mobile terminal, wherein the cell network corresponds to a wireless communications network corresponding to a network standard supported by the mobile terminal, and the cell identification information is frequency channel number information, or the cell identification information comprises frequency channel number information and auxiliary cell identification information;

the match determining unit (200) is configured to determine whether the cell identification information comprises cell identification information matching locked identification information, wherein a parameter of the locked identification information is in a one-to-one correspondence with a parameter of the cell identification information;

the network access unit (300) is configured to access a cell network corresponding to the locked identification information, when the cell identification information obtained by the cell identification information obtaining unit (100) comprises the cell identification information matching the locked identification information; and

the network discarding unit (400) is configured to skip accessing a wireless communication network when the cell identification information obtained by the cell identification information obtaining unit (100) does not comprise the cell identification information matching the locked identification information

characterized in that

the apparatus further comprises: a strongest network determining unit (101), an identification information determining unit (102), and an identification information locking unit (103), wherein

the strongest network determining unit (101) is configured to: before the step of determining, by the match determining unit (200), whether the cell identification information comprises the cell identification information matching the locked identification information, determine a cell network having maximum

signal strength in the at least one cell network that covers the current location of the mobile terminal, and send cell identification information corresponding to the cell network having maximum signal strength to a control device connected to the mobile device;

the identification information determining unit (102) is configured to determine, according to a region lock instruction delivered by the control device, the cell identification information corresponding to the cell network having maximum signal strength, wherein the region lock instruction comprises the cell identification information corresponding to the cell network having maximum signal strength; and the identification information locking unit (103) is configured to determine the cell identification information corresponding to the cell network having maximum signal strength as the locked identification information.

6. The apparatus according to claim 5, wherein when the network standard supported by the mobile terminal is GSM, the cell identification information is frequency channel number information and the locked identification information comprises a locked frequency channel number, and when the network standard supported by the mobile terminal is not GSM, the cell identification information comprises frequency channel number information and auxiliary cell identification information, and the locked identification information comprises a locked frequency channel number and locked auxiliary identification information.

7. The apparatus according to claim 5 or 6, wherein the network access unit is specifically configured to: when the obtained cell identification information comprises the cell identification information matching the locked identification information, and signal strength of the cell identification information matching the locked identification information is not less than a preset strength threshold, access the cell network corresponding to the locked identification information.

8. The apparatus according to any one of claims 5 to 7, wherein the cell identification information obtaining unit comprises: a frequency scanning subunit and/or a broadcast receiving subunit, wherein the frequency scanning subunit is configured to perform frequency scanning, and obtain the cell identification information of the at least one cell network that covers the current location of the mobile terminal from a frequency scanning result; and the broadcast receiving subunit is configured to: receive a cell broadcast message, and obtain, from the broadcast message, the cell identification information of the at least one cell network that covers

the current location of the mobile terminal.

9. A computer-readable storage medium comprising instructions which, when executed by a processor of a mobile terminal, cause the mobile terminal to carry out the steps of the method according to any one of claims 1-4.

10 Patentansprüche

1. Verfahren zum Einschränken eines Nutzungsbereichs eines mobilen Endgeräts, wobei das Verfahren vom mobilen Endgerät durchgeführt wird und das Verfahren Folgendes umfasst:

Erhalten (S100) von Zellidentifikationsinformationen von mindestens einem zellularen Netzwerk, das einen aktuellen Standort des mobilen Endgeräts abdeckt, wobei das zellulare Netzwerk einem Drahtloskommunikationsnetzwerk entspricht, das einem Netzwerkstandard entspricht, der vom mobilen Endgerät unterstützt wird, und die Zellidentifikationsinformationen Frequenzkanalnummerninformationen sind oder die Zellidentifikationsinformationen Frequenzkanalnummerninformationen und zusätzliche Zellidentifikationsinformationen umfassen;

Bestimmen (S200), ob die Zellidentifikationsinformationen Zellidentifikationsinformationen umfassen, die mit verriegelten Identifikationsinformationen übereinstimmen, wobei ein Parameter der verriegelten Identifikationsinformationen in einer Eins-zu-Eins-Entsprechung zu einem Parameter der Zellidentifikationsinformationen steht; und

Zugreifen (S300) auf ein zellulares Netzwerk, das den verriegelten Identifikationsinformationen entspricht, durch das mobile Endgerät, wenn die erhaltenen Zellidentifikationsinformationen die Zellidentifikationsinformationen umfassen, die mit den verriegelten Identifikationsinformationen übereinstimmen; oder Überspringen (S400) des Zugreifens auf ein Drahtloskommunikationsnetzwerk durch das mobile Endgerät, wenn die erhaltenen Zellidentifikationsinformationen die Zellidentifikationsinformationen, die mit den verriegelten Identifikationsinformationen übereinstimmen, nicht umfassen,

dadurch gekennzeichnet, dass

das Verfahren vor dem Schritt des Bestimmens, ob die Zellidentifikationsinformationen die Zellidentifikationsinformationen umfassen, die mit den verriegelten Identifikationsinformationen übereinstimmen, ferner Folgendes umfasst:

Bestimmen (S101) eines zellularen Netz-

- werks mit einer maximalen Signalstärke in dem mindestens einen zellularen Netzwerk, das den aktuellen Standort des mobilen Endgeräts abdeckt, und Senden von Zellidentifikationsinformationen, die dem zellularen Netzwerk mit der maximalen Signalstärke entsprechen, an eine Steuervorrichtung, die mit dem mobilen Endgerät verbunden ist;
- Bestimmen (S102) der Zellidentifikationsinformationen, die dem zellularen Netzwerk mit der maximalen Signalstärke entsprechen, gemäß einer Bereichsverriegelungsanweisung, die von der Steuervorrichtung zugestellt wird, wobei die Bereichsverriegelungsanweisung die Zellidentifikationsinformationen umfasst, die dem zellularen Netzwerk mit der maximalen Signalstärke entsprechen; und
- Bestimmen (S103) der Zellidentifikationsinformationen, die dem zellularen Netzwerk mit der maximalen Signalstärke entsprechen, als die verriegelten Identifikationsinformationen.
2. Verfahren nach Anspruch 1, wobei, wenn der Netzwerkstandard, der vom mobilen Endgerät unterstützt wird, GSM ist, die Zellidentifikationsinformationen Frequenzkanalnummerninformationen sind und die verriegelten Identifikationsinformationen eine verriegelte Frequenzkanalnummer umfassen, und wenn der Netzwerkstandard, der vom mobilen Endgerät unterstützt wird, nicht GSM ist, die Zellidentifikationsinformationen Frequenzkanalnummerninformationen und zusätzliche Zellidentifikationsinformationen umfassen und die verriegelten Identifikationsinformationen eine verriegelte Frequenzkanalnummer und verriegelte zusätzliche Identifikationsinformationen umfassen.
3. Verfahren nach Anspruch 1 oder 2, wobei das Zugreifen (300) auf ein zellulares Netzwerk, das den verriegelten Identifikationsinformationen entspricht, durch das mobile Endgerät, wenn die erhaltenen Zellidentifikationsinformationen die Zellidentifikationsinformationen umfassen, die mit den verriegelten Identifikationsinformationen übereinstimmen, Folgendes umfasst:
- wenn die erhaltenen Zellidentifikationsinformationen die Zellidentifikationsinformationen umfassen, die mit den verriegelten Identifikationsinformationen übereinstimmen, und eine Signalstärke der Zellidentifikationsinformationen, die mit den verriegelten Identifikationsinformationen übereinstimmen, nicht geringer ist als ein voreingestellter Stärkeschwellwert, Zugreifen auf das zellulare Netzwerk, das den verriegelten Identifikationsinformationen entspricht, durch das mobile Endgerät.
4. Verfahren nach einem der Ansprüche 1 bis 3, wobei das Erhalten (S100) von Zellidentifikationsinformationen von mindestens einem zellularen Netzwerk, das einen aktuellen Standort des mobilen Endgeräts abdeckt, Folgendes umfasst:
- Durchführen einer Frequenzabtastung durch das mobile Endgerät und Erhalten der Zellidentifikationsinformationen des mindestens einen zellularen Netzwerks, das den aktuellen Standort des mobilen Endgeräts abdeckt, aus einem Frequenzabtastungsergebnis oder Empfangen einer zellularen Broadcastnachricht durch das mobile Endgerät und Erhalten der Zellidentifikationsinformationen des mindestens einen zellularen Netzwerks, das den aktuellen Standort des mobilen Endgeräts abdeckt, aus der Broadcastnachricht.
5. Einrichtung zum Einschränken eines Nutzungsbereichs eines mobilen Endgeräts, wobei die Einrichtung auf das mobile Endgerät angewendet wird und die Einrichtung Folgendes umfasst: eine Zellidentifikationsinformationserhaltungseinheit (100), eine Übereinstimmungsbestimmungseinheit (200), eine Netzwerkzugriffseinheit (300) und eine Netzwerkverwerfungseinheit (400), wobei die Zellidentifikationsinformationserhaltungseinheit (100) dazu ausgelegt ist, Zellidentifikationsinformationen von mindestens einem zellularen Netzwerk zu erhalten, das einen aktuellen Standort des mobilen Endgeräts abdeckt, wobei das zellulare Netzwerk einem Drahtloskommunikationsnetzwerk entspricht, das einem Netzwerkstandard entspricht, der vom mobilen Endgerät unterstützt wird, und die Zellidentifikationsinformationen Frequenzkanalnummerninformationen sind oder die Zellidentifikationsinformationen Frequenzkanalnummerninformationen und zusätzliche Zellidentifikationsinformationen umfassen;
- die Übereinstimmungsbestimmungseinheit (200) dazu ausgelegt ist zu bestimmen, ob die Zellidentifikationsinformationen Zellidentifikationsinformationen umfassen, die mit verriegelten Identifikationsinformationen übereinstimmen, wobei ein Parameter der verriegelten Identifikationsinformationen in einer Eins-zu-Eins-Entsprechung zu einem Parameter der Zellidentifikationsinformationen steht;
- die Netzwerkzugriffseinheit (300) dazu ausgelegt ist, auf ein zellulares Netzwerk zuzugreifen, das den verriegelten Identifikationsinformationen entspricht, wenn die von der Zellidentifikationsinformationserhaltungseinheit (100) erhaltenen Zellidentifikationsinformationen die Zellidentifikationsinformationen umfassen, die mit den verriegelten Identifikationsinformationen übereinstimmen; und
- die Netzwerkverwerfungseinheit (400) dazu ausgelegt ist, das Zugreifen auf ein Drahtloskommunikations-

onsnetzwerk zu überspringen, wenn die von der Zellidentifikationsinformationserhaltungseinheit (100) erhaltenen Zellidentifikationsinformationen die Zellidentifikationsinformationen, die mit den verriegelten Identifikationsinformationen übereinstimmen, nicht umfassen,

dadurch gekennzeichnet, dass

die Einrichtung ferner Folgendes umfasst: eine Bestimmungseinheit (101) für ein stärkstes Netzwerk, eine Identifikationsinformationsbestimmungseinheit (102) und eine Identifikationsinformationsverriegelungseinheit (103), wobei die Bestimmungseinheit (101) für ein stärkstes Netzwerk zu Folgendem ausgelegt ist:

vor dem Schritt des Bestimmens durch die Übereinstimmungsbestimmungseinheit (200), ob die Zellidentifikationsinformationen die Zellidentifikationsinformationen umfassen, die mit den verriegelten Identifikationsinformationen übereinstimmen, Bestimmen eines zellularen Netzwerks mit einer maximalen Signalstärke in dem mindestens einen zellularen Netzwerk, das den aktuellen Standort des mobilen Endgeräts abdeckt, und Senden von Zellidentifikationsinformationen, die dem zellularen Netzwerk mit der maximalen Signalstärke entsprechen, an eine Steuervorrichtung, die mit der mobilen Vorrichtung verbunden ist;

die Identifikationsinformationsbestimmungseinheit (102) dazu ausgelegt ist, die Zellidentifikationsinformationen, die dem zellularen Netzwerk mit der maximalen Signalstärke entsprechen, gemäß einer Bereichsverriegelungsanweisung, die von der Steuervorrichtung zugestellt wird, zu bestimmen, wobei die Bereichsverriegelungsanweisung die Zellidentifikationsinformationen umfasst, die dem zellularen Netzwerk mit der maximalen Signalstärke entsprechen; und

die Identifikationsinformationsverriegelungseinheit (103) dazu ausgelegt ist, die Zellidentifikationsinformationen, die dem zellularen Netzwerk mit der maximalen Signalstärke entsprechen, als die verriegelten Identifikationsinformationen zu bestimmen.

6. Einrichtung nach Anspruch 5, wobei, wenn der Netzwerkstandard, der vom mobilen Endgerät unterstützt wird, GSM ist, die Zellidentifikationsinformationen Frequenzkanalnummerninformationen sind und die verriegelten Identifikationsinformationen eine verriegelte Frequenzkanalnummer umfassen, und wenn der Netzwerkstandard, der vom mobilen Endgerät unterstützt wird, nicht GSM ist, die Zellidentifikationsinformationen Frequenzkanalnummerninformationen und zusätzliche Zellidentifikationsinformationen umfassen und die verriegelten Identifikationsin-

formationen eine verriegelte Frequenzkanalnummer und verriegelte zusätzliche Identifikationsinformationen umfassen.

7. Einrichtung nach Anspruch 5 oder 6, wobei die Netzwerkzugriffseinheit speziell zu Folgendem ausgelegt ist:

wenn die erhaltenen Zellidentifikationsinformationen die Zellidentifikationsinformationen umfassen, die mit den verriegelten Identifikationsinformationen übereinstimmen, und eine Signalstärke der Zellidentifikationsinformationen, die mit den verriegelten Identifikationsinformationen übereinstimmen, nicht geringer ist als ein voreingestellter Stärkeschwellwert, Zugreifen auf das zellulare Netzwerk, das den verriegelten Identifikationsinformationen entspricht.

8. Vorrichtung nach einem der Ansprüche 5 bis 7, wobei die Zellidentifikationsinformationserhaltungseinheit Folgendes umfasst: eine Frequenzabtastungsuntereinheit und/oder eine Broadcastempfangsuntereinheit, wobei die Frequenzabtastungsuntereinheit dazu ausgelegt ist, eine Frequenzabtastung durchzuführen und die Zellidentifikationsinformationen des mindestens einen zellularen Netzwerks, das den aktuellen Standort des mobilen Endgeräts abdeckt, aus einem Frequenzabtastungsergebnis zu erhalten; und

die Broadcastempfangsuntereinheit zu Folgendem ausgelegt ist: Empfangen einer zellularen Broadcastnachricht und Erhalten der Zellidentifikationsinformationen des mindestens einen zellularen Netzwerks, das den aktuellen Standort des mobilen Endgeräts abdeckt, aus der Broadcastnachricht.

9. Computerlesbares Speichermedium, das Anweisungen umfasst, die, wenn sie von einem Prozessor eines mobilen Endgeräts ausgeführt werden, das mobile Endgerät veranlassen, die Schritte des Verfahrens nach einem der Ansprüche 1-4 umzusetzen.

Revendications

1. Procédé pour limiter une région d'utilisation d'un terminal mobile, dans lequel le procédé est réalisé par le terminal mobile, et le procédé comprend :

l'obtention (S100) d'informations d'identification de cellule d'au moins un réseau cellulaire qui couvre une localisation actuelle du terminal mobile, dans lequel le réseau cellulaire correspond à un réseau de communications sans fil correspondant à une norme de réseau supportée par le terminal mobile, et les informations d'identification de cellule sont des informations de nombre de canal de fréquence, ou les informations d'identification de cellule comprennent des in-

formations de nombre de canal de fréquence et des informations d'identification de cellule auxiliaire ;

la détermination (S200) du fait que les informations d'identification de cellule comprennent ou ne comprennent pas des informations d'identification de cellule assorties à des informations d'identification verrouillées, dans lequel un paramètre des informations d'identification verrouillées est dans une correspondance une-à-une avec un paramètre des informations d'identification de cellule ; et

l'accès (S300), par le terminal mobile, à un réseau cellulaire correspondant aux informations d'identification verrouillées, lorsque les informations d'identification de cellule obtenues comprennent les informations d'identification de cellule assorties aux informations d'identification verrouillées ; ou la non-réalisation (S400) de l'accès, par le terminal mobile, à un réseau de communication sans fil lorsque les informations d'identification de cellule obtenues ne comprennent pas les informations d'identification de cellule assorties aux informations d'identification verrouillées,

caractérisé en ce que

avant l'étape de la détermination du fait que les informations d'identification de cellule comprennent ou ne comprennent pas des informations d'identification de cellule assorties à des informations d'identification verrouillées, le procédé comprend en outre :

la détermination (S101) d'un réseau cellulaire ayant une intensité de signal maximum dans l'au moins un réseau cellulaire qui couvre la localisation actuelle du terminal mobile, et l'envoi d'informations d'identification de cellule, correspondant au réseau cellulaire ayant une intensité de signal maximum, à un dispositif de commande connecté au terminal mobile ;

la détermination (S 102), selon une instruction de verrouillage de région fournie par le dispositif de commande, des informations d'identification de cellule correspondant au réseau cellulaire ayant une intensité de signal maximum, dans lequel l'instruction de verrouillage de région comprend les informations d'identification de cellule correspondant au réseau cellulaire ayant une intensité de signal maximum ; et

la détermination (S103) des informations d'identification de cellule correspondant au réseau cellulaire ayant une intensité de signal maximum en tant qu'informations d'identification verrouillées.

2. Procédé selon la revendication 1, dans lequel, lorsque la norme de réseau supportée par le terminal mobile est GSM, les informations d'identification de cellule sont des informations de nombre de canal de fréquence et les informations d'identification verrouillées comprennent un nombre de canal de fréquence verrouillé, et, lorsque la norme de réseau supportée par le terminal mobile n'est pas GSM, les informations d'identification de cellule comprennent des informations de nombre de canal de fréquence et des informations d'identification de cellule auxiliaire, et les informations d'identification verrouillées comprennent un nombre de canal de fréquence verrouillé et des informations d'identification auxiliaire verrouillées.

3. Procédé selon la revendication 1 ou 2, dans lequel l'accès (300), par le terminal mobile, à un réseau cellulaire correspondant aux informations d'identification verrouillées, lorsque les informations d'identification de cellule obtenues comprennent les informations d'identification de cellule assorties aux informations d'identification verrouillées, comprend : lorsque les informations d'identification de cellule obtenues comprennent les informations d'identification de cellule assorties aux informations d'identification verrouillées, et l'intensité de signal des informations d'identification de cellule assorties aux informations d'identification verrouillées n'est pas inférieure à un seuil d'intensité prédéterminé, l'accès, par le terminal mobile, au réseau cellulaire correspondant aux informations d'identification verrouillées.

4. Procédé selon l'une quelconque des revendications 1 à 3, dans lequel l'obtention (S100) d'informations d'identification de cellule d'au moins un réseau cellulaire qui couvre une localisation actuelle du terminal mobile comprend :

la réalisation, par le terminal mobile, d'un balayage de fréquence, et l'obtention des informations d'identification de cellule de l'au moins un réseau cellulaire qui couvre la localisation actuelle du terminal mobile à partir d'un résultat de balayage de fréquence ; ou

la réception, par le terminal mobile, d'un message de diffusion cellulaire, et l'obtention, à partir du message de diffusion, des informations d'identification de cellule de l'au moins un réseau cellulaire qui couvre la localisation actuelle du terminal mobile.

5. Appareil pour limiter une région d'utilisation d'un terminal mobile, dans lequel l'appareil est appliqué sur le terminal mobile, et l'appareil comprend : une unité d'obtention d'informations d'identification de cellule (100), une unité de détermination d'assortiment

(200), une unité d'accès à réseau (300), et une unité de rejet de réseau (400), dans lequel l'unité d'obtention d'informations d'identification de cellule (100) est configurée pour obtenir des informations d'identification de cellule d'au moins un réseau cellulaire qui couvre une localisation actuelle du terminal mobile, dans lequel le réseau cellulaire correspond à un réseau de communications sans fil correspondant à une norme de réseau supportée par le terminal mobile, et les informations d'identification de cellule sont des informations de nombre de canal de fréquence, ou les informations d'identification de cellule comprennent des informations de nombre de canal de fréquence et des informations d'identification de cellule auxiliaire ; l'unité de détermination d'assortiment (200) est configurée pour déterminer le fait que les informations d'identification de cellule comprennent ou ne comprennent pas des informations d'identification de cellule assorties à des informations d'identification verrouillées, dans lequel un paramètre des informations d'identification verrouillées est dans une correspondance une-à-une avec un paramètre des informations d'identification de cellule ; l'unité d'accès à réseau (300) est configurée pour accéder à un réseau cellulaire correspondant aux informations d'identification verrouillées, lorsque les informations d'identification de cellule obtenues par l'unité d'obtention d'informations d'identification de cellule (100) comprennent les informations d'identification de cellule assorties aux informations d'identification verrouillées ; et l'unité de rejet de réseau (400) est configurée pour ne pas réaliser l'accès à un réseau de communication sans fil lorsque les informations d'identification de cellule obtenues par l'unité d'obtention d'informations d'identification de cellule (100) ne comprennent pas les informations d'identification de cellule assorties aux informations d'identification verrouillées

caractérisé en ce que

l'appareil comprend en outre : une unité de détermination de réseau le plus fort (101), une unité de détermination d'informations d'identification (102), et une unité de verrouillage d'informations d'identification (103), dans lequel l'unité de détermination de réseau le plus fort (101) est configurée pour : avant l'étape de la détermination, par l'unité de détermination d'assortiment (200), du fait que les informations d'identification de cellule comprennent ou ne comprennent pas les informations d'identification de cellule assorties aux informations d'identification verrouillées, déterminer un réseau cellulaire ayant une intensité de signal maximum dans l'au moins un réseau cellulaire qui couvre la localisation actuelle du terminal mobile, et envoyer des informations d'identification de cellule, correspondant au réseau cellulaire ayant une intensité de signal maximum, à un dispositif de commande connecté au dispositif

mobile ; l'unité de détermination d'informations d'identification (102) est configurée pour déterminer, selon une instruction de verrouillage de région fournie par le dispositif de commande, les informations d'identification de cellule correspondant au réseau cellulaire ayant une intensité de signal maximum, dans lequel l'instruction de verrouillage de région comprend les informations d'identification de cellule correspondant au réseau cellulaire ayant une intensité de signal maximum ; et l'unité de verrouillage d'informations d'identification (103) est configurée pour déterminer les informations d'identification de cellule correspondant au réseau cellulaire ayant une intensité de signal maximum en tant qu'informations d'identification verrouillées.

6. Appareil selon la revendication 5, dans lequel, lorsque la norme de réseau supportée par le terminal mobile est GSM, les informations d'identification de cellule sont des informations de nombre de canal de fréquence et les informations d'identification verrouillées comprennent un nombre de canal de fréquence verrouillé, et, lorsque la norme de réseau supportée par le terminal mobile n'est pas GSM, les informations d'identification de cellule comprennent des informations de nombre de canal de fréquence et des informations d'identification de cellule auxiliaire, et les informations d'identification verrouillées comprennent un nombre de canal de fréquence verrouillé et des informations d'identification auxiliaire verrouillées.
7. Appareil selon la revendication 5 ou 6, dans lequel l'unité d'accès à réseau est spécifiquement configurée pour : lorsque les informations d'identification de cellule obtenues comprennent les informations d'identification de cellule assorties aux informations d'identification verrouillées, et une intensité de signal des informations d'identification de cellule assorties aux informations d'identification verrouillées n'est pas inférieure à un seuil d'intensité prédéterminé, accéder au réseau cellulaire correspondant aux informations d'identification verrouillées.
8. Appareil selon l'une quelconque des revendications 5 à 7, dans lequel l'unité d'obtention d'informations d'identification de cellule comprend : une sous-unité de balayage de fréquence et/ou une sous-unité de réception de diffusion, dans lequel la sous-unité de balayage de fréquence est configurée pour réaliser un balayage de fréquence, et obtenir les informations d'identification de cellule de l'au moins un réseau cellulaire qui couvre la localisation actuelle du terminal mobile à partir d'un résultat de balayage de fréquence ; et

la sous-unité de réception de diffusion est configurée pour : recevoir un message de diffusion cellulaire, et obtenir, à partir du message de diffusion, les informations d'identification de cellule de l'au moins un réseau cellulaire qui couvre la localisation actuelle du terminal mobile. 5

9. Support de stockage lisible par ordinateur, comprenant des instructions qui, lorsqu'elles sont exécutées par un processeur d'un terminal mobile, font en sorte que le terminal mobile réalise les étapes du procédé selon l'une quelconque des revendications 1 à 4. 10

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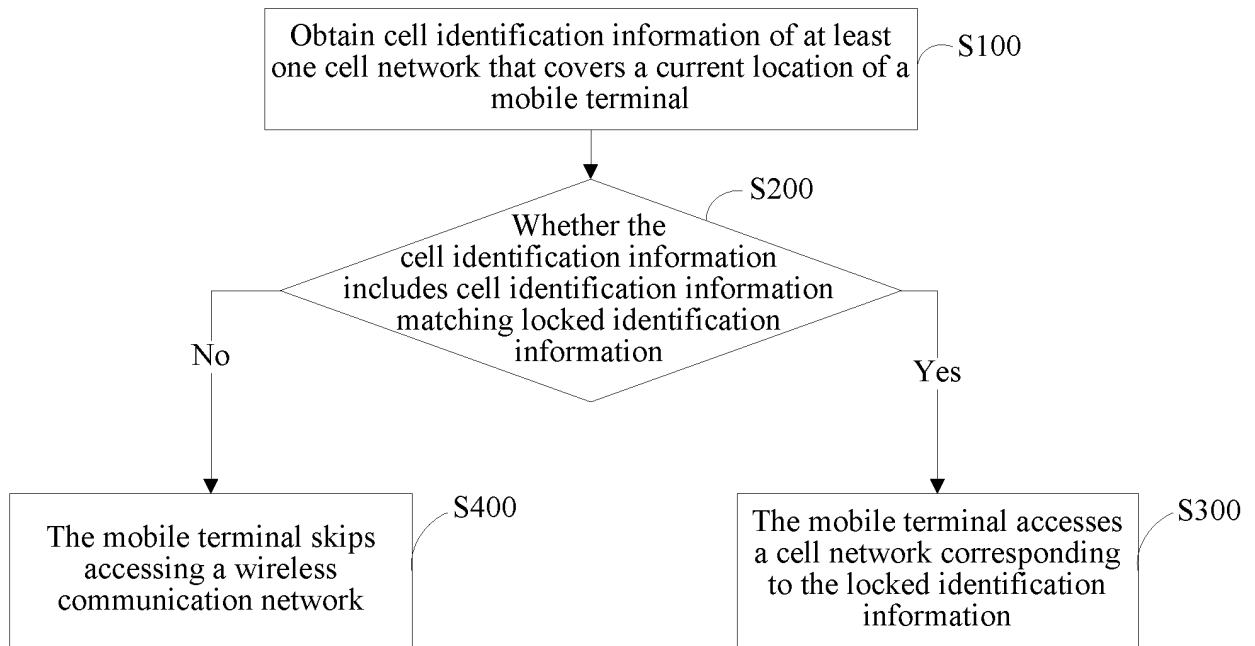


FIG. 1

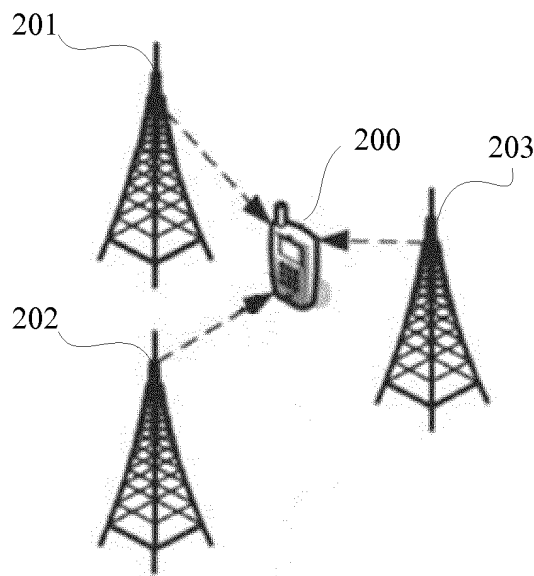


FIG. 2

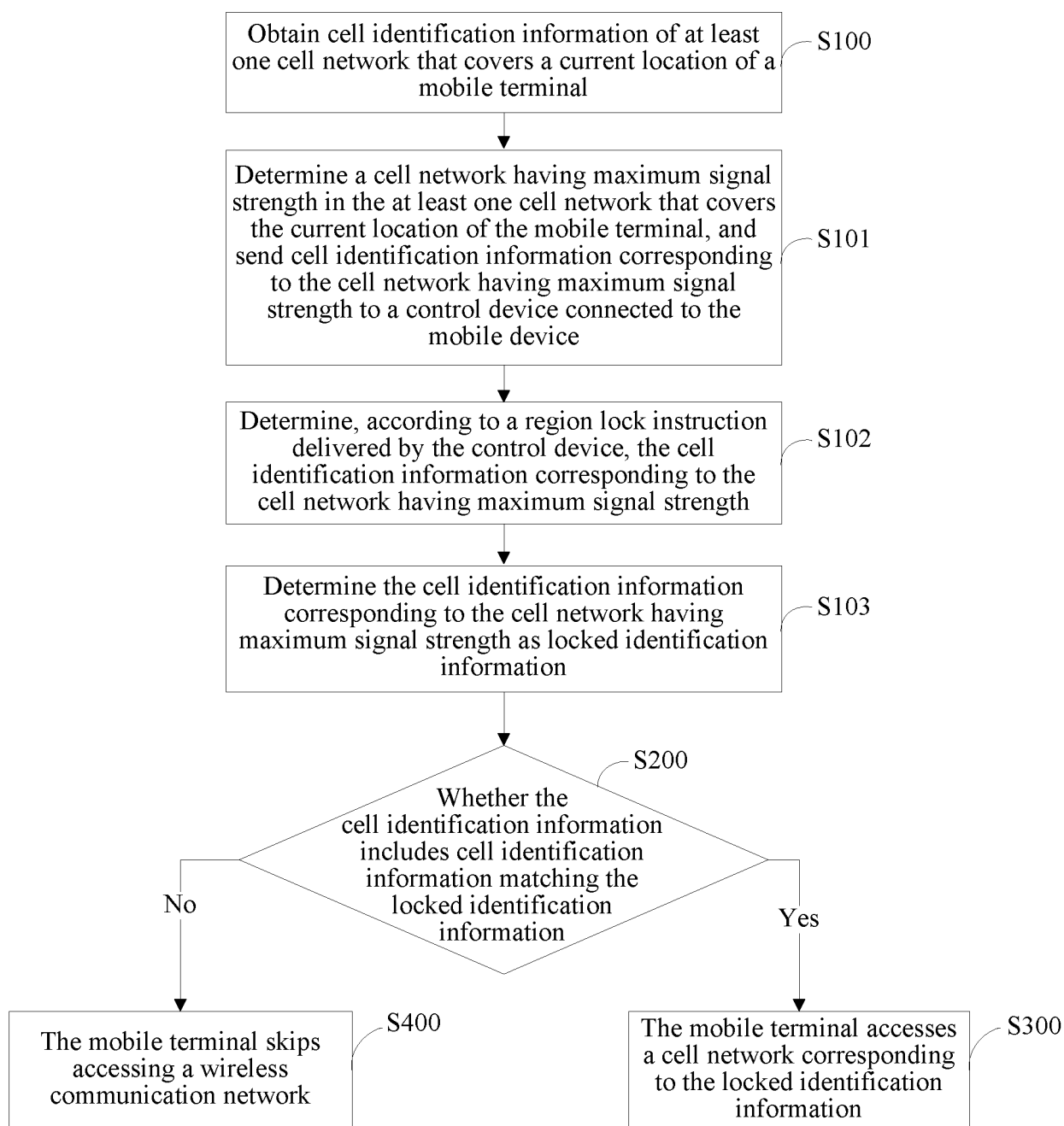


FIG. 3

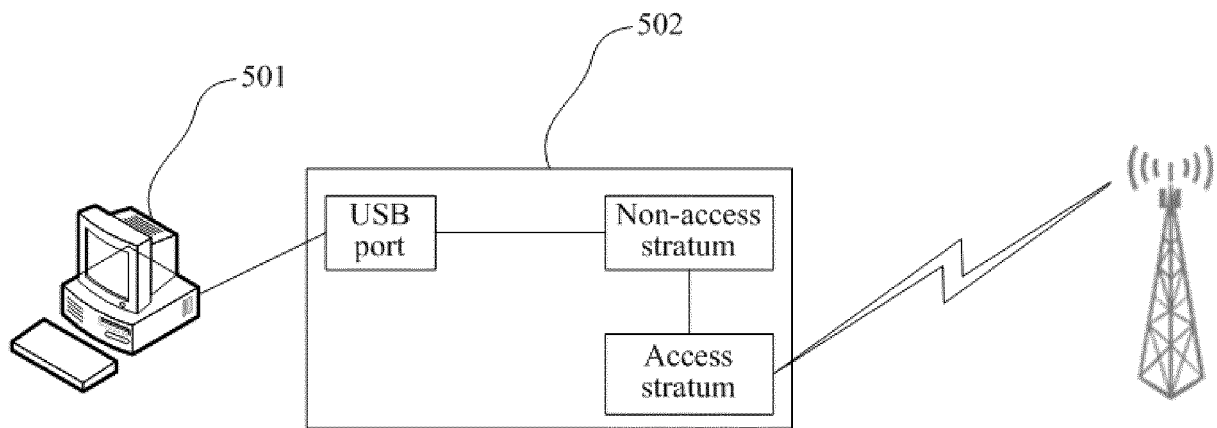


FIG. 4

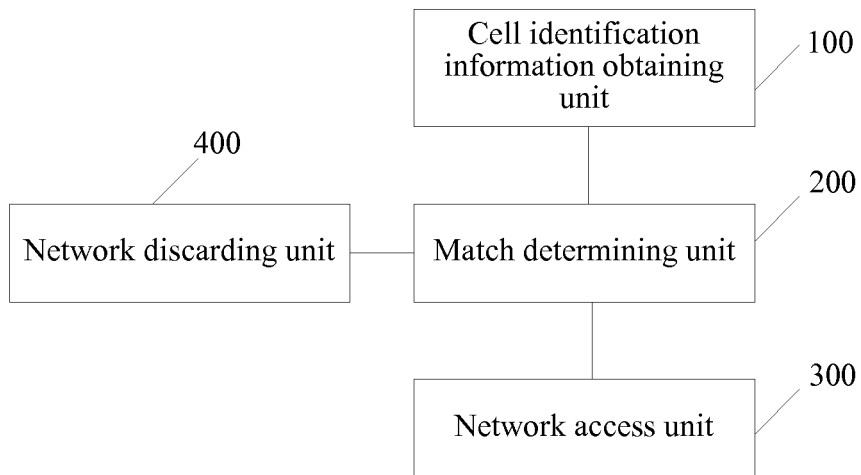


FIG. 5

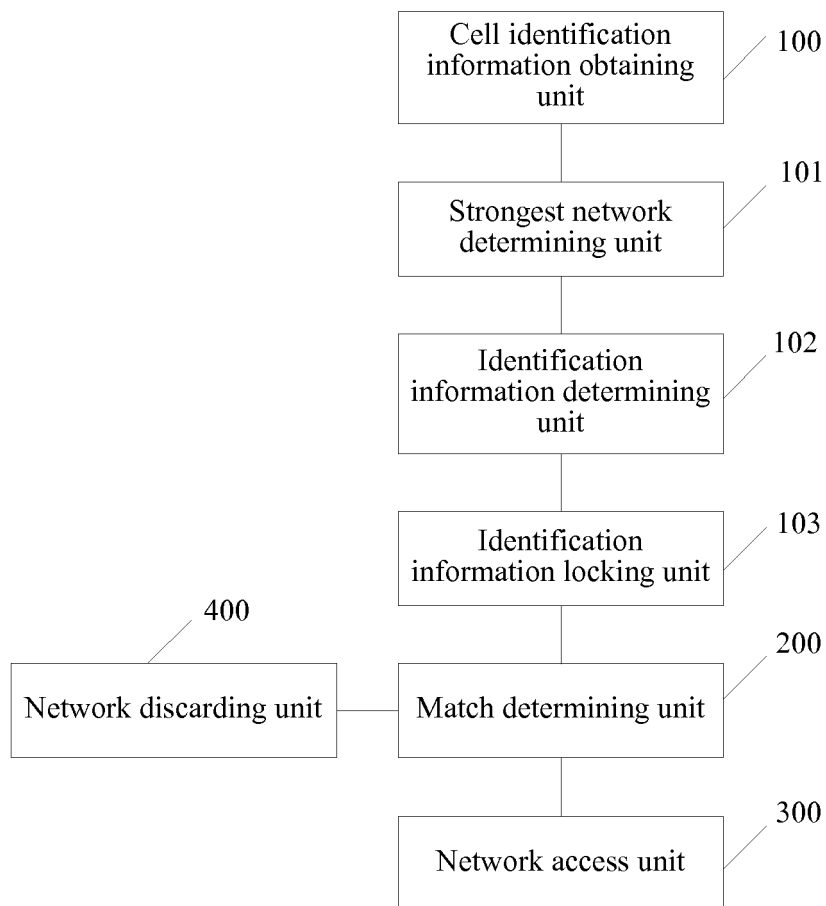


FIG. 6

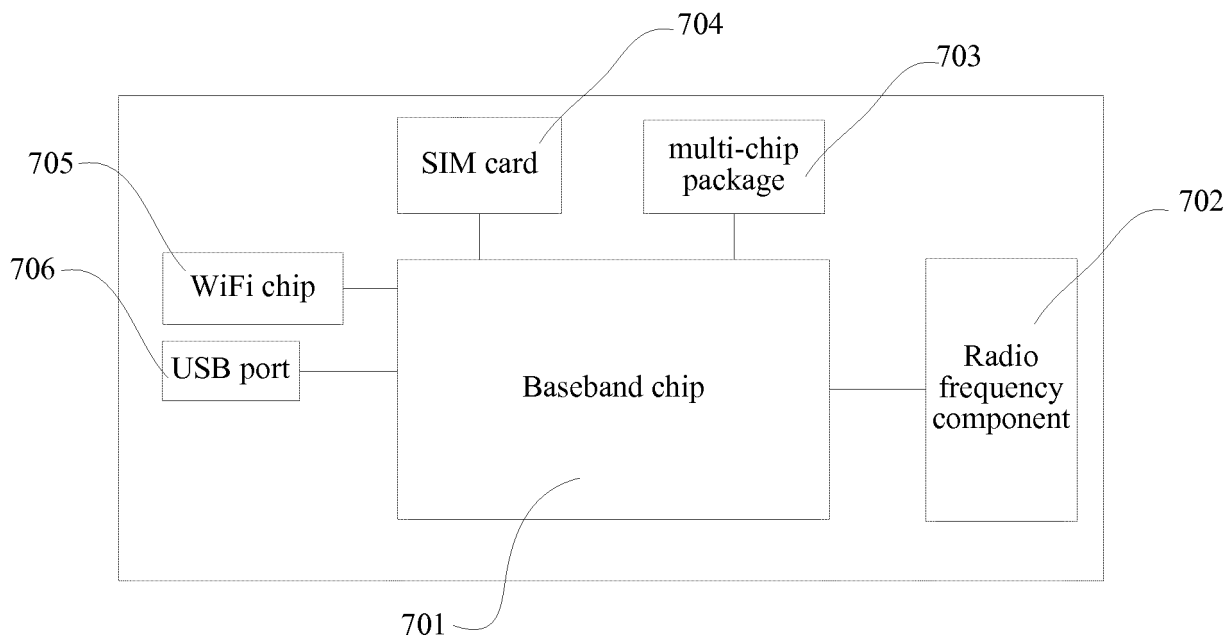


FIG. 7

REFERENCES CITED IN THE DESCRIPTION

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